

Congressional Testimony  
of  
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"The Future of Coal Under Climate Legislation:  
The Importance of Risk Management in the  
Commercial Deployment of CCS"

House Energy and Commerce Committee  
Subcommittee on Energy and Environment

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Chairman Markey, distinguished Members of the Energy and Environment Subcommittee, my name is Lindene Patton and I serve as the Chief Climate Product Officer for Zurich Financial Services (Zurich). Zurich is a global insurance company providing insurance and risk management solutions to customers in 170 countries. It has been serving customers in the United States since 1912, and today stands as the third largest commercial property-casualty insurer in the country, with over 20,000 employees nationwide.

I would like to begin my testimony by thanking you for holding this critical and timely hearing. Immediate, concrete and responsible actions, including the commercial-scale deployment of Carbon Capture and Sequestration (CCS) should be taken to reduce the risks associated with climate change.

Zurich is in the business of risk management.

In 2008, Zurich announced, as part of its climate initiative, that it would dedicate significant resources and apply its skills in the area of risk management to assist stakeholders in adapting to and mitigating the risks of climate change.

Zurich has applied these skills specifically to assess risk, price risk and develop risk management approaches for the commercial deployment of CCS. On January 19, 2009, we announced the availability of CCS Liability Insurance and Geologic Sequestration Financial Assurance policies, which we are today prepared to underwrite. In fact, we have released one premium indication for a project in the US, and we are in the process of receiving additional applications for coverage.

The focus of my testimony today will be what – based upon our evaluation of the property, casualty and environmental risks associated with the commercial deployment of CCS – are the essential risk management components of a legislative framework necessary to ensure the commercial deployment of CCS in an environmentally and economically sustainable manner. In other words, I will focus on what conditions are required before Zurich is willing to commit insurance capital to risks at CCS projects.

Insurance policies are a contract. The insurance contract can be configured to address certain liabilities that may emerge under a common law scheme, where no legislative or statutory framework yet applies. To foster full scale commercial deployment of CCS, substantial capital will be required, as well as additional safeguards with respect to siting and long-term stewardship. As an insurer, Zurich is only willing to commit risk capital today for CCS projects with appropriate geology, geochemistry, and operating and maintenance plans; and closure / post-closure plans. Specifically, insurance capital is available to CCS project developers to address pollution, transportation, well control, geo-mechanical events and business interruption costs during periods of facility operation, closure and post-closure.

The role of an insurer in the CCS context is to assess risk, price risk and create risk management best practices. Insurance imposes quality operating restrictions as a condition of continuing to receive insurance. Quality operations which seek to achieve sustainability are not only in the interest of the insurer, but are in the interest of the public good, reducing risk to property damage, bodily injury, environmental damage and other economic loss. Targeted underwriting criteria that foster sound risk management benefit both short term insured risks, and risk manifesting over the long term. In addition, strong underwriting criteria will beneficially influence the site's risk profile, thereby minimizing the potential for loss events and maximizing the characteristics which will best ensure long-term sequestration of CO<sub>2</sub>.

Insurance performs a role like no other in society, sending price signals to incentivize risk-reducing behavior. This is particularly important in managing risks arising from the deployment of new technologies. The insurance industry has substantial experience in sending price signals to assure the sustainable deployment of new and important technologies relevant to safety and the environment.<sup>1</sup>

In the case of CCS, at Zurich we consider the risks in three phases of the project – the operational phase, the closure phase and the post closure phase. In the CCS operational phase, insurance capital is available to address pollution, transportation, out of control wells, geomechanical events and business interruptions costs. In the closure and post-closure phases insurance capital can be deployed for the risks of increased implementation costs, accelerated closure, and, in some cases, cost over-runs. The challenges for committing capital during the post-closure period are more material as it is more difficult to anticipate risk decades from now.

The benefits that insurance brings to the risk management process – the price signaling, incentivizing best risk management practices and the pre-funding of potential financial losses – makes it critical that insurance be used to its fullest extent when it can be deployed.

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<sup>1</sup> Consider boiler and machinery coverage, mandatory sprinklers from the Hotel and Motel Safety Act 40 C.F.R. § 264.140-146 (2007); Price Anderson Act, Price-Anderson Act, 42 USC 2011 et seq.

To ensure that commercial deployment of CCS occurs in a sustainable manner with respect to natural resources, the environment and public safety, the following elements of a risk management framework are critical:

1. **Estimating the Expected Cost of Risk:** Appropriate analysis is needed to estimate the expected value of financial consequences that may arise from each individual CCS site,<sup>2</sup> as well as from an applicable portfolio of sites, which may develop over time with commercial scale deployment of CCS. Complete actuarial data is neither always required, nor often available in circumstances involving the deployment of a new technology. As such, alternative, sophisticated processes must be applied which are the province of the specialty insurance business – addressing risks where the frequency of losses occurring is low, but can be severe if a rare event manifests.
2. **Proper Risk Identification and Quantification to Inform Permitting, Operation and Maintenance Requirements:** No amount of insurance, trust fund or other financial risk management system can overcome poor siting or inappropriate operating techniques. True environmental sustainability of CCS sites depends squarely on the chemistry and geochemistry of the sites, and the sound operations of the facility itself. Feedstocks, industrial processes and geology at a given gas generation and sequestration operation will vary. As such, underwriting requirements will vary by site, but may include testing and pre-treatment prior to injection to assure quality and sustainability of reservoir conditions. To ensure that a CCS site has the highest likelihood of ultimately sequestering the CO<sub>2</sub> without causing ancillary damages, operational injection criteria must consider and be based upon the goal of achieving long-term sequestration and should not be compromised to accommodate less restrictive injection criteria for other operational reasons. If the operator is not the party ultimately responsible for the long term stewardship, it is important to require operating criteria which impose quality restrictions on the operations, and which take into consideration the long term stewardship impacts of current operations. A pure business model based solely on owner / operator responsibility only up and through the post-closure care period may not consider such impacts.

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<sup>2</sup> Expected value must incorporate the probability of adverse events occurring and the severity (financial consequences / costs) of such events. Expected financial consequences in a given year for each site are calculated as the product of potential financial consequences multiplied for a particular event by the annual probability of occurrence for that event, summed over all identified events, adjusted for interactive, additive or exclusive loss scenario characteristics, as applicable (in other words, one loss may lead to another; one type of loss may preclude the occurrence of another; etc.) Potential financial consequences are defined by taking each potential cause of loss, assigning a fixed financial consequence to same, which might include one or more of the following: property damage costs, bodily injury costs, business interruption costs, other environmental damages or economic losses. Results for each year are summed over the relevant time period and discounted to generate an expected value of financial consequences for an individual site or for a pool of sites.

3. **Establishment of a CCS Safety Board To Address Conflict of Laws and Resources:** With respect to siting, operational oversight and long-term stewardship of CCS facilities, a private / public government (mixed ownership) corporation ('CCS Safety Board' or 'CCSSB') should be chartered and vested with the authority to oversee the siting and design of CCS facilities and the management of CCS facilities in the event of conflict of laws or resources. Although the insurance industry can operate without a CCS Safety Board, if no such Board is created to address these conflicts of law, scarce and valuable economic resources<sup>3</sup> could be diverted to transactional costs – such as negotiating access issues or dispute resolution – making new common law – where no statutory law exists. Addressing this issue as soon as possible will ensure that scarce economic resources are used to manage public good directly with a unified public purpose to achieve climate and energy security goals, avoiding unintended diversion of scarce public resources to address conflict of law or dispute resolution expenses.
4. **Establishment of A Trust Fund ('CCS National Trust') for Long Term Stewardship Only:** A Long Term Stewardship CCS National Trust, managed by the CCSSB, should be established to pay long-term stewardship expenses and delimited compensatory damages resulting after the CCS facility is released from post-closure (not for financial assurance during the revenue generating operating period). Contributions to the Trust must map to the expected value of expenses / damages likely to be incurred over the long-term. Failure to map appropriately would mean there is little financial assurance that the balance of funds remaining at the time of site transfer will be appropriate to the long-term need for funds. This Trust would be best structured as a "revolving fund" to assure funding is appropriately reflective of the low likelihood (frequency) of a catastrophic event, relying on regulatory and private methods (insurance underwriting criteria) during operational, closure and post-closure periods to minimize the potential for an event later in the lifecycle of the site. By its nature, a revolving fund can be replenished, as required, after an event. A revolving fund is designed to have a minimum and a maximum balance.

With respect to the board and trust fund, the above recommendations are not dissimilar to current provisions governing the Oil Spill Liability Trust Fund (OSLTF) and the National Pollution Funds Center (NPFC) mandated by the Oil Pollution Act of 1990,<sup>4</sup> or the Presidio Trust, established by Congress in 1996 as an independent management entity to preserve the Presidio's natural resources.<sup>5</sup> In each of these cases, new and independent entities were established to address unique risks, where conflicts of laws would present in addressing the public goal of the subject

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<sup>3</sup> Scarce economic resources that could be used to manage climate risk or deploy more climate friendly or energy securing technology.

<sup>4</sup> Oil Pollution Act, P.L. 101-380, August 18, 1990. Oil Pollution, 33 USC 2701 et seq.

<sup>5</sup> 16 U.S.C. § 460bb appendix (enacted as Title I of H.R. 4236, P.L. 104-333, 110 Stat. 4097, on November 12, 1996)

legislation, where one or more agencies had conflicting and overlapping authority, and where no existing governmental agency was authorized or properly positioned to address the issues necessary to achieve the public policy goals.

**Finally, it is critical that policymakers avoid the establishment of any liability scheme that would provide first dollar indemnity for liability during operational, closure or post-closure periods:** No first dollar indemnity should be provided by sovereigns for risks manifesting from CCS activities during operational, closure or post-closure periods because indemnity separates actions from consequences and masks price signals. The financial risk management framework should align with the CCS project lifecycle. As such, the CCS facility operator should remain financially responsible for consequences arising during the operational phase – from capture through a defined period of post-closure, either time-delimited or based on site stabilization criteria. This does not mean that an operator cannot and should not be able to recoup reasonable and necessary costs to effectuate proper risk management of CO<sub>2</sub> through its business model. In fact, such recoupment of cost may be essential to the sustainability of the commercial deployment of CCS. In other words, operators must have sufficient funds to operate CCS facilities and such costs must be recognized as part of the business model.

However, operators must remain responsible for both the consequences of not doing what is reasonable and necessary and as otherwise set forth in their operating permit. Specifically, the operator should demonstrate the ability to manage site risks, technically and financially, using well tested first party assurances based upon their financial capacity or through third party mechanisms, such as annually renewable insurance policies.

CCS is what the financial services sector calls a specialty (non-standard) risk. As such, only a small part of the insurance sector is equipped and qualified to analyze the risks and place capital at risk thereon. The initial volume of CCS sites is anticipated to be small, when compared to the volume of other insured risks, such as number of automobiles or homes. The small number of participants should not be of concern for capital purposes because a small number of participants does not mean small amounts of capital. That said, other legal restrictions, such as anti-trust, may pose a barrier to immediate participation and capital commitment for immediate commercial scale deployment from the financial services sector (through insurance, etc) and the operating industry. A process similar to that followed with the advent of nuclear power risk management, e.g., anti-trust waivers for participating parties, may be necessary.

With respect to international action and implications of commercial scale deployment of CCS in the US, I have a few observations.

If we as a global community are to meet the 2050 emissions reductions recommended by the IPCC scientists, the US, Europe, Australia, China and India must reduce emissions from coal fired power plants. As you know, China and India continue to expand their use of coal without significant emissions controls, further increasing the importance of establishing a well working CCS program in the United States. Ultimately, it may be

necessary to not only export U.S. CCS technologies to China and India, but also our risk management frameworks and policies.

Further, despite the fact that CCS is not recognized under the trading schemes for certain credit generation purposes, other countries in the EU and Australia, are moving forward with CCS deployment.

In conclusion, after significant study, we at Zurich believe that commercial deployment of CCS is necessary today if we are to meet the recommended 2050 emissions reductions. We are willing to put substantial capital at risk, today, to insure the commercial deployment of CCS. If the recommendations outlined in my testimony are followed, Zurich believes that CCS can be deployed in a manner protective of natural resources and environmental health and safety, while achieving essential climate risk reductions. Zurich encourages Congress to move expeditiously, enacting legislation to support the commercial scale deployment of CCS. Zurich looks forward to continuing to work closely with the committee and Congress to assure the successful and timely commercial deployment of CCS.